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REMARKS

Claims 1-11 and 26-37 are all the claims presently pending in the application. Claims 1-11 have been amended to more particularly define the claimed invention. Claims 12-25 have been canceled. Claims 26-37 have been added to claim additional features of the claimed invention.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 1, 2 and 4 stand rejected under 35 U. S. C. §102(b) as allegedly unpatentable over Juestel et al. (JP Pub. 2002-223008). Claims 3, 5, 6, 7 and 9-11 stand rejected under 35 U. S. C. §103(a) as allegedly unpatentable over Juestel in view of Roberts et al. (U. S. Patent No. 6,335,548). Claim 8 stands rejected under 35 U. S. C. §103(a) as allegedly unpatentable over Juestel and Roberts and further in view of Mueller et al. (U. S. Patent No. 6,417,019).

These rejections are respectfully traversed in view of the following discussion.

I. THE CLAIMED INVENTION

The claimed invention (e.g., as recited, for example, in claim 1) is directed to a light emitting apparatus which includes a semiconductor light emitting element that emits light with a predetermined wavelength; a light-transmitting portion that includes a recess to house the semiconductor light emitting element, the light-transmitting portion being of a light-transmitting material and the recess being formed with a predetermined size provided by molding the light-transmitting material (Application at Figure 5B; page 13, lines 17-23), and a phosphor layer portion that is thinly formed along the surface of the recess, the phosphor layer portion including a phosphor to be excited by irradiating light emitted from the semiconductor light emitting element.

In a conventional apparatus, a light emitting diode (LED) is mounted on a

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substrate 37, a spacer 35A is used to seal the LED, and a phosphor layer 35 b is formed on the spacer 35A (Application at Figure 2; page 3, lines 5-10). However, in such an apparatus it is difficult to control the shape and thickness of the phosphor material with high precision (Application at page 3, lines 12-17).

The claimed invention, on the other hand, includes a light-transmitting portion having a recess which is formed with a predetermined size by molding a light-transmitting material (Application at Figure 5B; page 13, lines 17-23). In an exemplary aspect of the claimed invention, this may help to allow the phosphor layer to be formed as a uniform and thin layer (Application at page 14, lines 17-21).

II. THE ALLEGED PRIOR ART REFERENCES

A. Juestel

The Examiner alleges that Juestel teaches the invention of claims 1, 2 and 4. Applicant would submit, however, that there are features of the claimed invention that are not taught or suggested by Juestel.

Juestel discloses a light emitting element which is intended to have an improved lifetime. The light emitting element includes a light emitting diode (LED) 3 and a fluorescence layer 2 having a water-resistant coating (Juestel at Abstract).

However, Applicant would submit that Juestel does not teach or suggest a light-transmitting portion that includes a recess, "*the recess being formed with a predetermined size provided by molding the light-transmitting material*", as recited in claim 1 and similarly recited in claim 7. As noted above, in an exemplary aspect of the claimed invention, this feature may help to allow the phosphor layer to be formed as a uniform and thin layer (Figure 5B; page 13, lines 24-29).

Indeed, the Application describes an exemplary aspect of the claimed invention as including a recess formed with a predetermined size provided by molding the light-transmitting material (e.g., see Application at page 12, line 29 to page 13, line 2, and page 13, lines 17-20). Specifically, in an exemplary aspect, since the LED housing recess 50 may be made by injection-molding by filling transparent resin in a mold, it is clear that the LED housing recess 50 may include a predetermined size which may be

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defined by the mold, such that a gap 5B between the LED housing recess 50 and the LED element 4 can be minimized.

That is, in an exemplary aspect of the claimed invention a light-transmitting portion may include a recess which is formed with a predetermined size provided by molding the light-transmitting material.

This feature may allow at least the following effects to be obtained:

(a) The phosphor layer 5A can be formed as a uniform and thin layer since it is formed on the inner surface of the recess 50 with a predetermined size. With the uniform and thin phosphor layer 5A, the lowering of light intensity due to light absorption can be inhibited (e.g., prevented). Also, since the size of light source can be minimized substantially without being influenced by the thickness of phosphor layer 5A, light radiated from the light source can be sufficiently converged like a spot by the converging optical system. Thereby, the light intensity in a predetermined lighting range can be increased (Application at page 14, lines 17-28).

(b) Even when a large size LED element 4 (e.g., $1000\ \mu\text{m}^2$) is used, a good convergence characteristic can be secured while suppressing the enlargement of light source size caused by covering the light source with phosphor layer 5A (Application at page 14, line 29 to page 15, line 3).

(c) The LED element 4 can be precisely positioned to the phosphor layer 5A of lens 5. Therefore, light radiated from the light source can be adjustably converged in a desired lighting direction and in a desired lighting range. Further, the shape of lens 5 can be formed according to intended usage and convergence characteristic (Application at page 15, lines 5-11).

(d) In an exemplary method of forming the phosphor layer 5A on the surface of LED housing recess 50 of lens 5, the manner of forming a uniform and thin phosphor layer can be optioned. Therefore, the manufacturing cost can be reduced especially when an expensive phosphor material is needed to use since the amount used can be lowered (Application at page 15, lines 12-17).

Clearly, Juestel does not teach or suggest this novel feature which is included in an exemplary aspect of the claimed invention. That is, Juestel clearly fails to teach or

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suggest that a light-transmitting portion includes a recess being formed with a **predetermined size provided by molding the light-transmitting material**, as defined in claims 1 and 7 of this application. In Juestel, the size of a diode-housing space provided in an epoxy housing 6 must vary depending on the thickness of a fluorescence layer 2 formed on a diode 3.

For example, the diode 3 is covered with the fluorescence layer 2 which contains a phosphor, SrS:Eu, and then a light emitting element 1 is protected by the epoxy housing 6 (Juestel at paragraph [0050]). As shown in Figure 1 of Juestel, the epoxy housing 6 composes the outermost layer of the light emitting element 1. However, Juestel does not teach or suggest how the epoxy housing 6 is prepared. Juestel discloses only that the light emitting element 1 is protected by the epoxy housing 6. Thus, it should be generally interpreted that the diode 3 is covered with the epoxy housing 6.

As such, in Juestel, the size of a diode-housing space provided in the epoxy housing 6 varies depending on the thickness of the fluorescence layer 2 formed on the diode 3. **Namely, the size of the diode-housing space is determined by the thickness of the fluorescence layer 2, which is difficult to control in the manufacturing process thereof.**

Therefore, the light emitting element 1 of Juestel is **not capable of offering the effects (a)-(d) as obtained in an exemplary aspect of the claimed invention.**

Further, Applicant would point out that Juestel is merely intended to prevent the fluorescent substance from reacting with water in the ambient air (Juestel at Figure 1; paragraph [0005]). Juestel allegedly accomplishes this by coating the fluorescent substance with a waterproof film (e.g., latex) (Juestel at [0008], [0031]).

However, nowhere does Juestel teach or suggest forming a sealant between the diode 3 and the fluorescence layer 2. Indeed, Juestel merely states that "a light emitting device 1 is protected by the epoxy housing 6" (Juestel at [0052]). Moreover, even assuming that Juestel teaches a sealant formed between the diode 3 and the fluorescence layer 2, certainly Juestel does not teach or suggest that such sealant is for sealing the light-emitting element.

Therefore, Applicant would submit that there are features of the claimed

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invention that are not taught or suggested by Juestel. Therefore, the Examiner is respectfully requested to withdraw this rejection.

B. Roberts

The Examiner alleges that Juestel would have been combined with Roberts to form the claimed invention of claims 3, 5 and 6. Applicant would submit, however, that these references would not have been combined and even if combined, the combination would not teach or suggest each and every feature of the claimed invention.

Roberts is directed to a semiconductor radiator emitter package, in which a radiation emitter 202 (e.g., LED chip) is mounted on lead frame 201 (Roberts at col. 26, lines 18-29).

However, Applicant respectfully submits that Juestel and Roberts are unrelated. Indeed, Juestel is intended to waterproof a fluorescence layer in a light emitting element, whereas Roberts is directed to a radiation emitter package. No person of ordinary skill in the art would have considered combining these disparate references, absent impermissible hindsight.

In fact, Applicant submits that the references provide no motivation or suggestion to urge the combination as alleged by the Examiner. Indeed, these references clearly do not teach or suggest their combination. Therefore, Applicant respectfully submits that one of ordinary skill in the art would not have been so motivated to combine the references as alleged by the Examiner. Therefore, the Examiner has failed to make a prima facie case of obviousness.

Moreover, Applicant would submit that neither Juestel, nor Roberts, nor any alleged combination thereof teaches or suggests a light-transmitting portion that includes a recess, *"the recess being formed with a predetermined size provided by molding the light-transmitting material"*, as recited in claim 1 and similarly recited in claim 7. As noted above, in an exemplary aspect of the claimed invention, this feature may help to allow the phosphor layer to be formed as a uniform and thin layer (Figure 5B; page 13, lines 24-29).

Clearly, Roberts does not teach or suggest this novel feature. Indeed, the

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Examiner attempts to rely on Figure 19 and columns 29-30 to support his position. However, this is clearly unreasonable.

In fact, Figures 19A and 19B merely illustrate and columns 29-30 merely discuss a device having a lens 401 formed on dies 1909, 1910, 1911 above a cup 301. Nowhere in this passage or anywhere else for that matter, does Roberts teach or suggest forming a phosphor layer in a recess of the lens 401. In fact, Roberts merely states that the lens 401 is "formed directly above the cup 301" (Roberts at col. 30, lines 30-31) and describes a preferred curvature of the lens 401 (Roberts at col. 32, line 53-col. 33, line 6). However, Roberts does not teach or suggest a recess in the lens, the recess being formed with a predetermined size provided by molding a light-transmitting material. Therefore, Roberts clearly does not make up for the deficiencies of Juestel.

Therefore, Applicant would submit that these references would not have been combined and even if combined, the combination would not teach or suggest each and every feature of the claimed invention. Therefore, the Examiner is respectfully requested to withdraw this rejection.

C. Mueller

The Examiner alleges that Juestel would have been combined with Roberts and the Juestel/Roberts combination would have been further combined with Mueller to form the claimed invention of claim 8. Applicant would submit, however, that these references would not have been combined and even if combined, the combination would not teach or suggest each and every feature of the claimed invention.

Mueller discloses a method of fabricating a light emitting device which includes a phosphor layer 37 deposited on a light emitting diode 8 (Mueller at Abstract). However, Applicant respectfully submits that Mueller is unrelated to Juestel and Roberts. Indeed, in contrast to Juestel and Roberts, Mueller is intended to provide a light emitting device having an improved phosphor layer. No person of ordinary skill in the art would have considered combining these disparate references, absent impermissible hindsight.

In fact, Applicant submits that the references provide no motivation or

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suggestion to urge the combination as alleged by the Examiner. Indeed, these references clearly do not teach or suggest their combination. Therefore, Applicant respectfully submits that one of ordinary skill in the art would not have been so motivated to combine the references as alleged by the Examiner. Therefore, the Examiner has failed to make a prima facie case of obviousness.

Moreover, Applicant would submit that neither Juestel, nor Roberts, nor Mueller, nor any alleged combination thereof teaches or suggests a light-transmitting portion that includes a recess, "*the recess being formed with a predetermined size provided by molding the light-transmitting material*", as recited in claim 1 and similarly recited in claim 7.

Clearly, Mueller does not teach or suggest this novel feature. Indeed, the Examiner attempts to rely on col. 7, lines 19-20 to support his position. However, this is clearly unreasonable.

In fact, col. 7, lines 19-20 in Mueller merely discusses methods of depositing a phosphor layer. Specifically, Mueller teaches depositing a phosphor layer 37 directly on the LED 8. Nowhere does Mueller even teach or suggest forming a light-transmitting portion with a recess for housing the LED 8.

Thus, Mueller certainly does not teach or suggest a light-transmitting portion which includes a recess **formed with a predetermined size provided by molding a light-transmitting material**. Therefore, Mueller clearly does not make up for the deficiencies of Juestel and Roberts.

Therefore, Applicant would submit that these references would not have been combined and even if combined, the combination would not teach or suggest each and every feature of the claimed invention. Therefore, the Examiner is respectfully requested to withdraw this rejection.

III. FORMAL MATTERS AND CONCLUSION

Applicant notes that claims 4 and 7 have been amended to address the Examiner's objections thereto.

In view of the foregoing, Applicant submits that claims 1-11 and 26-37, all the

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claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Date: 4/28/06

Respectfully Submitted,



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CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that the foregoing Amendment was filed by facsimile with the United States Patent and Trademark Office, Examiner Andrew Owens Arena Group Art Unit # 2811 at fax number (571) 273-8300 this 28th day of April, 2006.



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